REMARKS

Claims 1, 3, 4, 5, 6, 7, 9, 11, 12, 13, 14, and 15 have been rejected. Applicant has amended claims 1, 5, 6, 7, 9, 13, 14, and 15. Reconsideration of pending claims 1, 3, 4, 5, 6, 7, 9, 11, 12, 13, 14, and 15 is respectfully requested.

112 - Claims 7 and 15

Applicant has amended claims 7 and 15 to overcome the 112 rejection.

103(a) - Claims 1, 3-5, 9, 11-13

The Examiner has rejected claims 1, 3-5, 9, and 11-13 under 35 U.S.C. 103(a) as being unpatentable over Snyder, et al. (6,252,608), in view of Ligtenberg (5,682,441). Applicant respectfully disagrees.

The Examiner has rejected claim 1 under 35 U.S.C. 103(a) as being unpatentable over Snyder, et al., in view of Ligtenberg. Applicant contends that neither Snyder nor Ligtenberg teaches the following limitation of the amended claim 1:

"compressing said tile by storing data in a plane equation format when said compressed tile is smaller than said tile;"

There is no mention of compressing by using plane equations in Snyder and Ligtenberg. Although both teach image compression, neither discloses method of compressing images through the use of plane equations. Ligtenberg teaches the use of JPEG compression (col. 2, lines 38-39) while Snyder discloses the use of various compression schemes based on color data, such as color transform, DCT, uniform or perceptual quantization (col. 35, lines 57-65). The present invention uses plane equations to reduce the amount data needed to store Z data pixels.

Since none of the references suggests or teaches modification to overcome the lack of the above-cited limitation, it is not obvious to combine them to create the present invention. As such, the rejection based on 103(a) on claim 1 has been overcome.

Thus Applicant asserts that claim 1 is allowable and claim 9 is allowable for the same reasoning. Since claims 3-5 and 11-13 are based on claim 1 or 9, they are allowable as well.

<u>103(a) - Claims 6 and 14</u>

The Examiner has rejected claims 6 and 14 under 103(a) as being unpatentable over Snyder, et al., in view of Ligtenberg, and further in view of Walker (6,104,837). The Examiner cited that Snyder discloses method of "storing information equivalent to a plane equation" (col. 30, lines 9-20). Applicant respectfully disagrees. Applicant asserts that the information stored in Snyder is not equivalent to storing a plane equation of the present invention. The list of stored information in Snyder includes primitive type, vertex information, etc. Such information is basic to all graphic systems and methods for rendering primitives. However, the information in Snyder is not used for the purpose of compression. The novelty in the present invention lies in

encoding such basic information into the plane equation format and thus lessening memory storage requirement for storing such graphical data. Snyder offers no such scheme of storing.

As for the Walker reference, it discloses a method of "determining patches of adjoining pixels which have common depth values and assigning a common depth value to all pixels in a patch (Abstract)." In contrast, the present invention does not involve reassignment of depth value (Z value) in pixels. The assignment of fragment ID number is part of the plane equation encoding scheme that helps the system recover the original information without loss of data accuracy. Pixel data in the present invention always retains its original depth value. Such value is not reassigned for the purpose of compression, as in the case of Walker. In Walker, pixel depth values that fall within a range of values receive a common, single new value (col. 6, lines 4 - 9). Furthermore, fragment ID is unrelated to the depth data in the present invention. The fragment ID is an external counter given by the compression processes as it compresses the data. Having a common fragment ID does not mean having common depth data in the present invention. As neither Snyder nor Walker teaches the limitation of claim 6, Applicant asserts that claims 6 in allowable. Since claim 14 has the same basis as claim 6, it is allowable for the same reason.

CONCLUSION

For the foregoing reasons, Applicant contends that claims 1, 3-7, 9, 11-15, as amended, are allowable over the cited art. Since claims 2, 8, 10, and 16 now rest allowable base claims, their objection has been overcome as well. Applicant has added claims 17-24. Applicant asserts that the present application is now in condition for allowance.

Respectfully submitted,

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MARKED UP COPY OF CLAIMS

Per 37 CFR 1.121(c)(1)(ii)

1. (AMENDED) A method of compressing data in a graphics processing system comprising:

defining a plurality of tiles of data;

defining a tile format table containing a status entry for each of said plurality of tiles;

identifying the number of primitives contained in a tile;

compressing said tile by storing said data in a plane equation format when said compressed tile is smaller than said tile;

setting said status entry for said compressed tile in said tile format table; and

storing said compressed tile in a memory.

5. (AMENDED) The method of claim 4 wherein pixels in said tiles represent Z data.

6. (AMENDED) The method of claim 5 wherein said step of compressing [compression] comprises:

storing a plane equation for each primitive in said tile, wherein each primitive [having] has a fragment ID number[,]; and

storing [the] a fragment ID [for] with each pixel in each said primitive.

7. (AMENDED) The method of claim 6 wherein [the] said plane equation of pixels [in the group] is computed by:

[subtracting Z pixels in the group that have the same fragment ID number from the Z value of the first pixel in the group of that fragment ID number]

using the Z value of a first pixel as a first term of said plane equation;

subtracting X values of adjacent pixels in X that have the same fragment ID number to obtain a second term; and

subtracting Y values of adjacent pixels in Y that have the same fragment ID number to obtain a third term.

9. (AMENDED) A graphics processing system comprising:

a first memory for storing a plurality of tiles of data;

a second memory for storing a tile format table containing a status entry for each of said plurality of tiles; and

a compression system coupled to said first and second memories for compressing by storing said data in a plane equation format said tile when said compressed tile is smaller than said tile, for setting said status entry for said compressed tile in said tile format table, and for storing said compressed tile in a memory.

13. (AMENDED) The graphics processing system of claim 12 wherein said pixels in said tiles represent Z data.

14. (AMENDED) The graphics processing system of claim 13 wherein said compression system compresses by [comprises] storing a plane equation for each primitive in said tile, wherein each primitive [having] has a fragment ID number, and storing [the] a fragment ID for each pixel in each said primitive.

15. (AMENDED) The graphics processing system of claim 14 wherein [the] said plane equation of pixels [in the group] is computed by:

[subtracting Z pixels in the group that have the same fragment ID number from the Z value of the first pixel in the group of that fragment ID number]

using the Z value of a first pixel as a first term of said plane equation;

subtracting X values of adjacent pixels in X that have the same fragment ID number to obtain a second term; and

subtracting Y values of adjacent pixels in Y that have the same fragment ID number to obtain a third term.